

## FAQ's About Biology 318

*BI 318 is NON-MAJORS Microbiology; it is designed for pre-nursing, pre-dental hygiene students, and students majoring in Exercise Science or Community Health. If you are a Biology Chemistry (Medicinal Track) Major, the Microbiology class you need to take is BI 331.*

### **What are the pre-requisites for taking BI 318?**

Biology 318 pre-requisites were increased in 2017 and now include: C in BI 102 (or an equivalent course emphasizing biological molecules, cell biology, metabolism, and genetics/gene expression), AND a C in BI 234 (or an equivalent Anatomy and Physiology/A&P course that includes an overview of the immune system), AND a C in 100-level Math (emphasizing basic algebra) or a passing grade in 300/400-level Math.

### **What if I've taken a year of A&P but never had to take BI 102?**

Some students who have completed 200-level A&P have been asking us to waive the BI 102 pre-requisite. It is important to understand that we teach this course at the 300-level. Therefore, students need to come in understanding things that are not covered sufficiently in most A&P courses. Here are three example concepts that require knowing vocabulary beyond most A&P coursework:

- (1) Viruses hijack or steal many things from host cells, including ribosomes, cell membranes, and polymerases. Viruses that are RNA-based, however, MUST carry their own RNA-dependent RNA polymerases. If you fully understand cellular gene expression, you should be able to explain why.
- (2) Evolution occurs via mutation and recombination - or drift and shift. Viruses drift at high rates when they make their own polymerases; viruses shift when their genomes are segmented. Bacteria drift at high rates when they carry plasmids; bacteria shift via transformation, conjugation, and phage interference.
- (3) To make energy from food, eukaryotic cells use aerobic respiration (which uses the electron transport chain) or anaerobic fermentation (which bypasses the electron transport chain). Many prokaryotic cells uniquely use anaerobic respiration, meaning their special electron transport chains use something other than oxygen to make energy from food. Each of these processes can be distinguished using medically-important laboratory tests, which involve understanding the biochemistry of metabolism.

### **What if I STILL think I can handle BI 318 without BI 102?**

If after reading all of this information, students feel they have sufficient BI 102 knowledge, they can discuss "credit by examination" with the Biology Department Head. This process is described in the WOU catalog under "Credit By Examination." Three very important features of this process include: (a) it involves a \$125 fee because BI 102 is 5 credits and the evaluation costs \$25 per credit; (b) it will involve taking a 2-hour 150-point final exam with a B (80%) or higher; and (c) it is a "one-shot" evaluation and can not be repeated.

### **How hard is the math in BI 318?**

In 2017, BI 318 adopted a "quantitative literacy" learning outcome because there are weekly math problems in this course, requiring a minimum of 100-level math competency. For this reason, we do not waive the math pre-requisites in this course. Here are three example problems in this course:

- (1) Candida measures 5 microns. If your light microscope field of view is 0.75 mm, how many Candida fit across this diameter?
- (2) You plate 0.2 ml of a 20 ml tube. What is the dilution step of this procedure? Remember that your answers must be typed in as simplified fractions (e.g. 1/2 or 1/10).
- (3) You are a public health worker and have been provided with 10 ml of contaminated milk to analyze. You add 1 ml of the milk to 9 ml of sterile water (dilution tube 1). You then repeat this procedure, making dilution tube 2. You plate 0.25 ml from each dilution tube. After growing your plates, you observe 88

colonies on plate 1 and no colonies on plate 2. Using this information, how many bacteria are in the original tube?

***What does it mean that this course is HYBRID?***

At this time, all non-summer offerings of BI 318 are HYBRID – meaning that a portion of the credit/assignments are completed on-line. These include on-line pre-labs (10 pts per assignment, completed nearly every week) and on-line video/reading assignments (10 pts per assignment, 6-7 per term). In general, students report spending 1.5-2 hours on these assignments each week. Students who have chronic attendance problems often skip on-line work, failing because they lose so many points.

***How challenging – in general – is BI 318?***

Although BI 318 has earned a reputation as a challenging class, our class averages are often high (80-85% at the end of most terms). That said, there has been a high drop rate in this class the last 5 years – particularly among pre-nursing students trying to take the class without A&P, or Health-PE students with low grades in A&P and/or Math. That is a key reason we increased the pre-req's for this course. Here is a sample microbe study list for ONE exam (there are 3 total) in this course:

**Unit 1 Microbe List** - *Note: this list does not include general microbe groups or anti-viral drugs!*

<u>Bacillus anthracis</u>	Kuru	Rotavirus
BSE	Mumps	Rubella
CJD – Both Versions	Norovirus or Norwalk	Rubeola
Hepatitis A, B, C, E	Papilloma/HPV	Scrapie
Herpes	Polio	Varicella
HIV	Rabies	Variola
Influenza	Rhinovirus	Zika

**Virus Notecard** - *The recommended notecard structure changes with each unit/topic and does not cover ALL lecture topics; it is simply a tool to organize important ideas about each virus (in this case).*

Virus Name (DO NOT CONFUSE scientific names with common disease names!)

Disease Name (Sometimes these are the same as the microbe name but often they are different!)

Genetics (DNA, RNA, or Retrovirus)

Envelope/Transmission

Disease Information/Body Target

Miscellaneous (e.g. Shift & Drift, antiviral drugs – if mentioned)